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UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY

FOREST INSECT INVESTIGATIONS

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ANNUAL FOREST INSECT STATUS REPORT

Season of 1928

GOVERNMENT PRINTING OFFICE

ANNUAL FOREST INSECT STATUS REPORT

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INTRODUCTION

For the past five years the forest rangers of this District have made an annual report to the District Forester covering the general status of insect conditions within their districts. Each year these reports are compiled and summarized in a brief report, a copy of which is forwarded to all Supervisors. This information, together with a brief account of the more important control projects, forest insect surveys, and experimental studies, portrays in a fairly accurate manner the present status of insect conditions and project activity within the District.

Though the information secured from the rangers becomes more dependable as they secure experience with their problems, it is felt that there is yet considerable progress to be made. Work of this character is but a phase of forestry which falls entirely within the field of the forest ranger. The economic importance of the problem would seem to justify its serious consideration by all forest officers making these reports. It is only from the prompt and accurate reporting of abnormal insect conditions that

serious outbreaks can be checked while still in their incipiency. The submission of these reports does not require a special training, but it is necessary that their importance be realized, and that each officer familiarize himself with each situation reported upon. A few hours of field work may be necessary to secure the information which will often be found to be essential for the presentation of an accurate picture of the situation. It is believed that some changes could be made in the form used by the rangers for their annual reports which would simplify and improve the character of the information submitted. Such a form will be prepared before the close of the 1929 season.

SUMMARY OF RANGER REPORTS OF 1928

Ranger reports were received from 154 areas, which is an increase of 14 over the previous season. Forty-six of these areas showed no insect infestation, or it proved to be of such minor importance that the inclusion of the area within this summary was not warranted. Of the 108 reported insect infestations, 53 were considered as increasing, 29 decreasing, and 26 were considered as being in a normal status. There were 23 recommendations for control, while in the other 85 situations no control was thought to be necessary. Of the 24 Forests reporting, the Beartooth and Cabinet were the only ones reporting no insect outbreaks.

A summary of the different insects reported upon follows:

Name of Insect	Number of Reported Infestations Increasing	Decreasing	Normal	Total
Mountain pine beetle	33	13	10	56
Western pine beetle	2	2	1	5
Douglas fir beetle	5	4	2	11
Scolytus subscaber			1	1
Ips oregoni		1		1
Spruce budworm	11	12	4	27
Needle tyer		1		1
Lodgepole pine sawfly	1			1
Aphid Chermes cooleyi	4	1		5

It would seem that outbreaks of the mountain pine beetle in the white pine stands of the District are seriously increasing in size and number. There are 27 outbreaks of this character reported, 18 of which were increasing. The Coeur d'Alene, Pend Oreille, St. Joe, Flathead, Kootenai, and Kaniksu Forests again report increasing outbreaks of this insect in white pine, with new outbreaks on the Pend Oreille, Blackfeet, Flathead, Kootenai, and Kaniksu which were reported for the first time. Most of these areas have been visited by the writer, or by District officers, and the seriousness of the situations as indicated by the ranger reports is fully confirmed. On the Kootenai National Forest an

alarming situation exists, as in practically all of the white pine stands there is what can easily be called the forerunner of a serious epidemic. On the Pend Oreille there are several situations which are apparently developing into serious epidemics.

The present status of the mountain pine beetle in lodgepole pine would seem to be even more serious than in previous years. There were 26 reported outbreaks of this insect in lodgepole pine, 16 of which were considered as increasing in severity. The Nezperce, Bitterroot, Blackfeet, Deerlodge, Flathead, Jefferson, and Missoula Forests again report increasing infestations, with new outbreaks on the Pend Oreille, Bitterroot, Blackfeet, Deerlodge, Helena, Jefferson, Kootenai, and Missoula. These data do not include the Beaverhead Forest which was covered by an insect survey during the past summer, and reported upon in connection with the Big Hole Basin control project. The results of this survey showed that practically the entire Forest was now covered with an increasing infestation. To add to the seriousness of the situation which exists within this District, there is now present within the Salmon Forest of District 4 a tremendous epidemic of the mountain pine beetle in lodgepole pine, which now is spreading into the southern portion of the Beaverhead National Forest.

New outbreaks of the Douglas fir beetle were reported from the Pend Oreille, Absaroka, Blackfeet, and Flathead; with the

Coeur d'Alene, Pend Oreille, Absaroka, Bitterroot, Blackfeet, Flathead, and Lewis and Clark again reporting existing outbreaks.

An analysis of the ranger reports shows that there has been no material change in the spruce budworm epidemic over the 1927 season. The infested areas now cover an acreage of approximately 789,770 acres, which is an increase from last year of 41,290 acres. The Clearwater, Nezperce, Selway, St. Joe, Gallatin, Helena, and Madison again report old and new outbreaks, with the Coeur d'Alene and Lolo Forests reporting epidemics for the first time. A number of these outbreaks were reported as decreasing and it is sincerely trusted that such conditions will prove to be true, and that a general decline of the epidemic throughout the country will follow. Since the spruce budworm has been recognized as an enemy of our western forests, it has been assumed that pure stands of Douglas fir, grand fir, and alpine fir were the preferred hosts, and that other conifers were only attacked when occurring in association with these species. However, during the past summer a pure stand of lodgepole pine in the southwest corner of the Yellowstone National Park was found to be seriously defoliated by the spruce budworm. So thoroughly had the insect adapted itself to this host that the few scattered firs, which occurred throughout the stand, were practically untouched. This makes the consideration of this insect as an enemy of our pine forests a more serious one.

The Madison Forest reports that the epidemic of the lodgepole needle tyer, which has been responsible for the death of a large acreage of lodgepole pine reproduction at West Yellowstone, is decreasing. The writer visited this area during the past season and feels that all indications point to such a decrease, and it is hoped that such conditions will continue to prevail.

Control measures against outbreaks of the mountain pine beetle were recommended for areas on the Coeur d'Alene, Pend Oreille, Blackfeet, Flathead, Kootenai, and Kaniksu National Forests, while in lodgepole pine the Bitterroot, Deerlodge, and Kootenai National Forests recommended the institution of control.

The Absaroka and Coeur d'Alene National Forests requested control for outbreaks of the Douglas fir beetle, while no requests were received for control of spruce budworm outbreaks.

1928 FIELD SEASON

Insect Surveys

Beaverhead National Forest

In connection with the Big Hole Basin forest insect control project, a survey of practically the entire Beaverhead National Forest was made during the past season. The data secured from this survey showed that there were some 250,000 trees attacked in 1928 as against some 65,000 in 1927, or an increase of 285 per cent. This marked

increase was the result of insects spreading into the area from the heavy infestation on the Bitterroot and Salmon National Forests.

Kootenai National Forest

During the latter part of September an extensive examination was made of a number of infested areas within the Kootenai National Forest. These areas were examined for the purpose of determing the present status of insect conditions and to ascertain the need for artificial control.

Coeur d'Alene National Forest

During the first part of October a rather intensive examination was made of the East Fork of Steamboat Creek, Coeur d'Alene National Forest. The data secured from this examination showed that there was a rather alarming outbreak of the mountain pine beetle in the white pine stands of this region, which would perhaps develop into a serious epidemic unless checked.

Control Operations

Beaverhead National Forest

During the past season control operations were conducted within the Big Hole Basin in accordance with the plan of control as adopted in 1925, which was an attempt to check the southern spread of the epidemic. During the past season some 55,000 trees were treated

which resulted in a very good clean-up of the areas under consideration. The cost of the project amounted to approximately $90,000, or $1.78 per tree. This figure shows a reduction of $0.21 per tree, or 11 per cent, over the 1927 season.

Date secured from the past season's survey proved that the infestation had spread over practically the entire Beaverhead National Forest, and that there had been a tremendous number of trees attacked during the 1928 season. Due to the tremendous expense and man power necessary to treat this number (250,000) of trees, and the fact that the infestation would undoubtedly continue to increase for the next few years, made the though of continuing the present project rather prohibitive. Furthermore, the fact that the insects from the Salmon Forest were spreading into the areas to the south of the Big Hole Basin placed the continuation of the present project as a means of preventing the southern spread of the epidemic, in a very untenable position. These conditions and the fact that no assurance of success could be given resulted in the present project being dropped.

Kootenai National Forest

During the past season control measures were instituted in the Pete Creek and O'Brien Creek drainages of the Kootenai National Forest. Approximately 1,050 trees were treated at a total cost of $3,814.

The Pete Creek project was instituted in 1926 in an attempt to reduce an outbreak of the mountain pine beetle in the white pine stand of that drainage. This project was viewed entirely in the light of an experiment, as a few miles to the north there existed a very severe epidemic of the same insect in lodgepole pine. Though no physical connection existed between these two outbreaks there could be no assurance that the inception of the outbreak in white pine had not come from the lodgepole pine. However, due to the timber values at stake, and the valuable entomological data which could be secured from such a project, it was felt that the cost of the experiment would be more than justified. Each year the area has been reinfested, but it was still believed that the expenditure for artificial control was justified. However, at this time there can be no doubt but that the insects are spreading into the area from the lodgepole, and in view of this condition it has been recommended that the project be discontinued.

INVESTIGATIONS CONDUCTED BY BUREAU OF ENTOMOLOGY

Practically the entire efforts of the Coeur d'Alene Station of the Bureau of Entomology are directed towards the development of new methods of control, or the improvement of those already in use, for the suppression of mountain pine beetle outbreaks in lodgepole pine. For the past four years the experimental work in connection

with this project has been conducted on the East Fork of the Bitterroot River which is in the heart of the severe Bitterroot epidemic. Various methods of control have been or are in the process of being tested at this time.

Some work has been done on the interrelation of forest fires and insects as well as the effects of defoliation on forest trees. Though the investigative program of the station is as large as the limitations of personnel will permit, it does not include in its scope all of the many economic problems of forest entomology which confront us at this time.

PLANS FOR 1929 SEASON

Beaverhead National Forest

It has been definitely decided that control work within the Big Hole Basin will be discontinued. This action was necessary in that with our present knowledge of the situation further work could in no way contribute towards the prevention of the southern spread. Though the present plan has been discontinued, there will be no abatement in the effort to check the spread of the epidemic into the areas south of the Beaverhead National Forest. During the 1929 season an intensive survey will be made of the Targhee, Madison, and Gallatin National Forests to determine if there is any infestation in these areas. It will be necessary to continue

this survey for an indefinite number of years, or as long as an epidemic remains on the Beaverhead. All infested trees which may occur in these areas will be promptly treated. This plan will take advantage of the rather wide timberless areas which lie between the southern portion of the Beaverhead and the timber stands to the south, which the present project is trying to protect.

Kootenai National Forest

Plans for insect control work within the Kootenai National Forest have not been definitely decided upon. Recommendations have been submitted for the institution of artificial control in several white pine stands where outbreaks of the mountain pine beetle exist. The adoption of these recommendations will depend upon the availability of funds.

Coeur d'Alene National Forest

Artificial control measures have been recommended for the East Fork of the Steamboat Creek drainage, Coeur d'Alene National Forest. This project will be for the purpose of combating an outbreak of the mountain pine beetle in white pine.

CONCLUSIONS

From an analysis of our present knowledge of insect conditions within the District, it would seem that the situation is a very serious one. It is impossible to attempt to forecast the future of

the present conditions as they may continue for several years or die down in a very short time. We know that the situation in lodgepole pine is indeed a serious one, and unless the epidemics are checked in some manner a still greater volume of timber than has been lost during the past fifteen or more years will be destroyed. The increased damage to the white pine stands of Idaho and Montana by the mountain pine beetle is viewed with considerable alarm, as a general epidemic is feared.

The spruce budworm epidemics present a serious problem as the thoughts of control for general epidemics are nearly prohibitive because of the expense involved. Furthermore, with the adaption of the insect to lodgepole pine as a host, its consideration as a potential enemy of our pine forests becomes a more serious one. It is gratifying to note that in most places the epidemics of this insect are reported as decreasing, and it is hoped that this condition will prevail.

Respectfully submitted,

James C. Evenden

James C. Evenden
Entomologist.

Approved:

Elers Koch

Elers Koch
Assistant District Forester

Forest and Area	Insect	Host	Increasing: Decreasing	First Reported	Control Recommended
CLEARWATER N. F.					
French Mountain	S.Budworm	WF	Decreasing	1928	No
Forks of Lolo	S.Budworm	WF	"	1928	No
North Fork River	MPB	WP	"	1927	No
COEUR D'ALENE N.F.					
Little North Fork	MPB	WP	Stationary	1925	Yes
Burnt Cabin Creek	MPB	WP	Increasing	1928	To be cut within 2 years
Grizzley Creek	S.Budworm	WF DF	Increasing	1928	No
Steamboat & Cougar Creeks	S.Budworm	WF	Stationary	1928	No
Eagle Creek	MPB	WP	"	1928	No
Brett & Miner's Creeks Ridge	MPB	WP	Increasing	1928	Yes
Independence Creek	MPB	WP	"	1928	Yes
Tourist Creek	DFB	DF	"	1927	Yes
Falls Creek	MPB	WP	Normal	1925	Yes
Lower North Fork	MPB	WP	"	1928	To be cut in 1929
NEZPERCE N. F.					
Ranger Dist. No.3	S. Budworm	WF DF	Decreasing	1924	No
S.Fk. Clearwater	S. Budworm	WF AF DF ES LP L	"	1924	?
Elk City District	S. Budworm	DF WF ES	"	1924	No
Bargamin Creek Moose Creek Otterson Creek Lower Big Mallard Cr	Spruce Budworm	DF WF	"	1924	?
Hell's Half-Acre	MPB	LP	Increasing	1926	No
Saddle Gulch	Larch Sawfly?	LP	"	1928	No
Little Clearwater	S. Budworm	DF	Decreasing	1928	No
PEND OREILLE N.F.					
Boundary Creek	MPB	WP	Decreasing	1928	No
Smith & Cow Creeks	MPB	WP	Increasing	1924	Yes
Dry Gulch	MPB	WP	"	1928	Yes
Lightning Creek	MPB	WP	Decreasing	1928	No
Black Mountain	MPB?	LP	Increasing	1928	No
Brush Creek	MPB	WP	"	1928	No
Entire Forest	DFB	DF	Normal	1928	No
Mission Creek	MPB	WP	Decreasing	1928	No

Forest and Area	Insect	Host	Increasing: Decreasing:	First Reported:	Control Recommended
SELWAY N. F.					
Crow Cr.Drainage)	S.Budworm	WF DF	Increasing	1928	No
Running Creek)	S.Budworm	WF DF	"	1928	No
Moose Cr.Dist.	S.Budworm	WF ES	Increasing	1927	?
Upper & Middle Lake Creeks Drainages	S.Budworm	ES AF WF DF	Stationary	1927	No
Lost Creek) Indian Grave Cr.)	S.Budworm	ES AF DF WF LP	Stationary	1926	No
Meadow Cr. Dist.	S.Budworm	WF DF ES LP	Increasing	1927	No
Middle Fork Dist.	S.Budworm	DF WF ES AF	"	1927	No
Iron Mt.& Bear Grass Units	S.Budworm	ES WF	"	1926	No
ST. JOE N. F.					
Gold Cr.Drainage	MPB	WP	Normal	1928	No
Round Top Dist.	S.Budworm	ES	?	1928	?
N.Fk.St.Joe Drainage	S.Budworm ?	ES	Increasing	1928	No
Cedar & E.Fk. Meadow Creeks	S.Budworm ?	L	?	1928	No
ABSAROKA N.F.					
Snowy Mt.	DFB	DF	Increasing	1928	Yes
Hell Roaring Creek	DFB	DF	"	1927	No
BEARTOOTH N.F.	No infestation reported.				
BEAVERHEAD N.F.	No ranger reports submitted.				
BITTERROOT N.F.					
North End Dist.	MPB	LP YP	Normal	1928	No
Rye Creek	MPB	LP	Increasing	1924	Yes
East Fk.Bitterroot	DFB	DF	Decreasing	1924	No
" " "	MPB	LP YP	Increasing	1924	Yes
West Fork Dist.)	MPB	LP	Decreasing	1925	
" " ")	DFB	DF	"	1925	No

Forest and Area	Insect	Host	Increasing : Decreasing	First Reported	Control Recommended
BLACKFEET N.F.					
Upper North Fk.Dist.	MPB	LP	Stationary	1927	No
Bowen Cr.Drainage	MPB	LP	Increasing	1928	No
Lower Kimberly & Canyon Creeks	MPB	WP	Increasing	1928	Yes
Wolf Creek	MPB	LP	Normal	1926	No
Tally Lake Dist.	DFB	DF	Increasing	1928	No
Shepherd Creek	MPB	LP	Increasing	1927	No
Fortine Dist.)	MPB	LP	Normal	1927	
" ")	DFB	DF	"	1927	No
" ")	S. subscaber	WF	"	1927	
CABINET N. F.	Ranger reports from four districts; no insect infestations reported.				
CUSTER N.F.					
White Tail Dist.	WPB	YP	?	—	—
Ranger Dist. No.--	WPB	YP	Increasing	—	No
Ranger Dist. No.2	WPB	YP	?	1928	No
DEERLODGE N.F.					
Fishtrap Dist.	MPB	LP	Increasing	1924	No
Fleecer District	MPB	LP	"	1928	Yes
Boulder District	MPB	LP	?	1927	No
Deerlodge Dist.	MPB	LP YP	Decreasing	1921	No
Georgetown & Echo Lakes	MPB	LP	Increasing	1926	Yes
FLATHEAD N. F.					
Krauser & Noisy Creeks	MPB	WP	Increasing	1927	Yes
Coram District	MPB	LP	Normal	1926	No
Trout Lake Area	MPB	WP LP	Increasing	1927	Yes
Bunker Creek	MPB	LP	"	1927	No
Deerlôck	DFB	DF	"	1928	No
GALLATIN N. F.					
Little Bear Creek	Aphid Chermes cooleyi	DF	Increasing	1928	No
Fridley Creek	S.Budworm	DF ES	"	1927	No
N.Fork 16 Mile	Chermes cooleyi	DF	" ?	1927	No
Bridger Dist.	" "	DF	Decreasing	1927	No
Jackson Creek	S.Budworm	DF	"	1928	No
Brackett & Stone Crs.	S.Budworm	DF	?	1928	No
Corbly Canyon	S.Budworm	DF	Decreasing	1928	No
V Canyon	S.Budworm	DF	"	1928	No
Upper Gallatin	Chermes cooleyi	DF	Increasing	1928	No
" "	P. knecteli	LP	Normal	1928	No
Lemmon's Cutting Area	Carphoborus ponderosae	LP	"	1928	No

Forest and Area	Insect	Host	Increasing: Decreasing	First Reported	Control Recommended
HELENA N. F.					
Cabin Gulch Drainage	S.Budworm	DF	Increasing	1924	No
Stonewall & Rumbug Crs. & Along River)	MPB ?	LP YP	Decreasing	1928	No
Blackfoot District	MPB	LP	Decreasing	1922	No
JEFFERSON N. F.					
Upper Dry Wolf	MPB ?	LP	Decreasing	1927	No
Lone Willow Creek	MPB ?	LP	"	1928	No
South Fk.Judith River	MPB ?	YP	Increasing	1928	No
Timber Creek	DFB	DF	Decreasing	1928	No
Tillig Host Creek	MPB ?	LP	"	1928	No
KOOTENAI N. F.					
O'Brien Cr.Drainage	MPB	WP Limber P.	Increasing	1927	Yes
Bear Creek	MPB	WP	"	1926	Yes
Silver Butte & Meadow Cr) Iron Mt. Creek	MPB	WP	"	1927	Yes
Ten Mile Drainage	MPB	WP	"	1928	Yes
Pipe Creek	MPB	WP	"	1928	No
Pinkham Creek	MPB	LP	"	1927	Yes
LEWIS and CLARK N. F.					
Dearborn Dist. #6)	DFB	DF	Normal	1928	No
" ")	D.murrayanae	LP ES			
LOLO N. F.					
Albert Creek	WPB	YP	Decreasing	1928	No
Two Mile Drainage	MPB ?	LP L	Stationary	1928	No
Moose Creek	S.Budworm	WF ES	Increasing	1927	No
Squaw & Papoose Cr. Drainages	S.Budworm	AF ES	Increasing	1925	No
MADISON N. F.					
Madison River Basin	Needle Tyer	LP	Decreasing	1924	No
" " "	Ips oregoni	LP	"	1924	No
" " "	MPB	W.Bark Pine	"	1928	No
Cascade Creek	S.Budworm	ES	Stationary	1927	No
MISSOULA N. F.					
Philipsburg Dist. Douglas Cr.,Little Gold Cr Marshall Cr. Upper & Lower Willow Cr.,Smart Cr., East Fork Rock Cr.	MPB	LP	Increasing	1925	No
Monture Dist.	MPB	LP	Decreasing	1925	No
Upper Gold Creek	MPB	LP YP	Increasing	1928	No
Middle Fork	MPB	LP	"	1928	No
Sandstone Ridge	MPB	LP	"	1928	No

Forest and Area	Insect	Host	Increasing: Decreasing	First Reported	Control Recommended
KANIKSU N. F.					
N. Fk. Granite Creek	MPB	WP	Increasing	1928	No
Upper Squaw Valley	MPB	WP	"	1928	No
Lost Creek	MPB	WP	"	1928	Yes
Cusick District	MPB	WP	"	1928	No